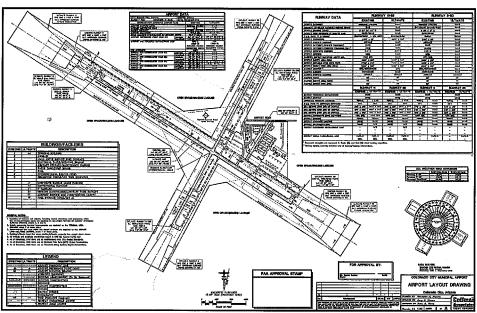


Chapter Five AIRPORT PLANS

# AIRPORT PLANS





The airport master planning process has evolved through several analytic efforts in the previous chapters intended to analyze future aviation demand, establish airside and landside facility needs, and evaluate options for the future development of the airside and landside facilities. The planning process, thus far, has included the presentation of a Phase One report - representing the first four chapters of the master plan - to the Planning Advisory Committee (PAC) and Town of Colorado City staff. The recommended master plan concept did not evolve until the PAC and Town of Colorado City officials had the detailed opportunity to submit comments on the Phase One report. Having completed this review process, the development alternatives have now been refined into a single recommended master plan concept. The purpose of this chapter is to describe in narrative and graphic form, the recommended

direction for the future use and development of the Colorado City Municipal Airport.

# RECOMMENDED MASTER PLAN CONCEPT

The FAA has established design criteria to define the physical dimensions of runways, taxiways, and imaginary surfaces which protect the safe operation of aircraft at the airport. FAA design standards also define the separation criteria for the placement of landside facilities. As discussed previously in Chapter Three, FAA design criteria is a function of the critical design aircraft's the most demanding aircraft or "family" of aircraft which will conduct 500 or more operations (take-offs and landings) per year at the airport - wingspan and approach speed, and in some cases, the runway approach visibility minimums.

The Federal Aviation Administration (FAA) has established the Airport Reference Code (ARC) to relate these factors to airfield design standards. Runway 11-29 was designed and constructed to ARC B-II (aircraft approach speeds less than 120 knots. wingspans less than 79 feet) design standards, while Runway 2-20 was designed and constructed to ARC B-I (aircraft approach speeds less than 120 knots, wingspans less than 49 feet) design standards.  $\mathbf{A}\mathbf{n}$ analysis conducted in Chapter Three indicated that while the airport should expect an increase in operations by larger, more sophisticated aircraft through the planning period, this increase is not expected to result in a change in design standards.

While a change in design standards is not expected during the planning period of this Master Plan, this does not prevent the airport from planning for this possibility in the future. Considering that the airport presently has limited landside and taxiway facilities, developing future facilities to conform with a more demanding design standard could prevent the need to relocate these facilities at a later date. Consider the location of a parallel taxiwav. Should greater separation distance be required between the runway and taxiway, the parallel taxiway and hangar and apron areas, which are placed according to the location of the parallel taxiway, may ultimately need to be relocated. Additionally, since most property near the airport is presently undeveloped, there is an opportunity to secure property to provide for the safe

operation of the airport well beyond the planning period of this Master Plan.

Considering the PAC and Town of Colorado City desire not to constrain the ultimate development of the airport. ARC C-II design standards have been selected for the ultimate design of the primary runway, Runway 11-29. A C-II ARC was selected after considering the ultimate role of the airport and the type of aircraft which can be reasonably expected to operate at the airport. Considering that the airport serves general aviation aircraft exclusively. business jet aircraft are expected to be the most demanding aircraft to operate at the airport. Nearly all business jets fall within ARC C-II. ARC C-II also includes common business turboprop aircraft and turboprop and regional jet aircraft used in commercial air service.

While present airport activity does not indicate a need to construct Runway 11-29 to ARC C-II standards, the recommended master plan concept does include locating the future parallel taxiway to Runway 11-29 300 feet north of Runway 11-29 to conform with ARC C-II standards. Additionally, the land acquisitions included in the recommended master plan concept include property to protect ARC C-II object free area, runway safety area, and runway protection requirements for Runway 11-29. Table 5A summarizes the planning standards used in the ultimate design and layout of the airport.

The recommended master plan concept also includes a 600-foot extension to the Runway 11 end. Present airport

	Runway 2-20	Ultimate Runway 11-29
Airport Reference Code Approach Visibility Minimums	B-I <sup>1</sup> Visual	C-II One Mile
Runway Width Runway Safety Area (RSA)	60	100
Width Length Beyond Runway End Object Free Area (OFA)	120 240	400 1,000
Width Length Beyond Runway End Runway Centerline to:	250 240	800 1,000
Parallel Taxiway Centerline Edge of Aircraft Parking Apron	225 125	300 400
Runway Protection Zones (RPZ) Inner Width Outer Width Length	250 450 1,000	500 1,010 1,700
Obstacle Clearance	20:1	20:1
Building Restriction Line  Distance from Runway Centerline	370	495
Taxiways Width Safety Area Width Object Free Area Width Taxiway Centerline to: Parallel Taxiway/Taxilane Fixed or Moveable Object	25 49 89 69 44.5	35 79 131 105 65.5
Taxilanes Taxilane Centerline to: Parallel Taxilane Centerline Fixed or Moveable Object Taxilane Object Free Area	64 39.5 79	97 57.5 115

activity suggests that the extension is not a priority at this time. As evidenced in the runway length analysis in Chapter Three, the existing runway length is sufficient for the mix of aircraft currently using the airport. The need for the runway extension will be a factor of future business jet activities at the airport and should be constructed in response to those needs.

The recommended master plan concept includes developing parallel taxiways to each runway. Presently, aircraft must back-taxi on the runway and turn around at the runway end. This compromises airfield safety and reduces capacity since these aircraft must occupy the runway for extended periods of time to access the desired runway end and/or terminal area.

Global Positioning System approaches are proposed for each end of Runway 11-29 to reduce the amount of time that the airport is inaccessible due to low visibility and cloud ceilings, to enhance the safety of operations during these periods, and eventually replace the existing nondirectional beacon The greatest (NDB) approach. limitation of existing NDB approach are the high cloud ceiling and visibility minimums, especially for aircraft with higher approach speeds. The FAA plans to eventual phase-out nondirectional beacons. Consideration may be given to eventually phasing-out the airport NDB as the number of NDB users decreases.

Airfield lighting recommendations include installing pavement edge lighting along future parallel taxiways and runway entrance/exit taxiways to assist in the ground movement of aircraft at night and during poor weather conditions and installing a precision approach path indicator (PAPI) to each end of Runway 2-20 to aid pilots in correctly identifying the correct descent path to the runway end.

A review of runway visibility zone (RVZ) and transitional surface standards indicates that these areas fall outside of the existing airport property To prevent a situation where incompatible facilities are developed in these critical safety areas, recommended master plan concept includes acquiring property to protect the entire RVZ surface extending outside the existing property line and to a 35-foot clearance of the transitional surface (commonly used to define a building restriction line at airports).

The existing apron area and terminal building fall within the RVZ. RVZ design standards apply to airports with an intersecting runway configuration which are without an operating airport traffic control tower. The RVZ standards specify that the RVZ should be clear of objects which could prevent an adequate view of the intersecting runway. The recommended master plan concept provides for future landside development outside of the RVZ.

The recommended master plan concept closely follows Landside Alternative D. This was selected by the PAC as the preferred direction for future landside development as this provides for the construction of apron and buildings outside the RVZ, locates the terminal area along the primary runway, and does not require the relocation of any existing facilities - namely the nondirectional beacon and automated weather observation system.

This alternative includes developing a new aircraft apron east of the existing terminal area, parallel with Runway 11-29. A new access road is also planned from Airport Avenue. Future terminal, fuel storage, and conventional hangars are planned along the north side of the apron.

Future T-hangar development is planned along the west side of the future tiedown apron and along the existing hangar access taxiway. The T-hangars along the future east apron were located to provide for the ultimate expansion of the apron to the west and a helipad. A helipad is planned to provide a designated area for helicopter arrivals and departures.

An area for individual hangar development is reserved along the east side of the existing airport entrance road.

An aircraft wash/maintenance facility is planned along the taxiway south of the existing aircraft storage/maintenance hangar. An aircraft wash/maintenance facility is intended to provide an area for aircraft owner's to complete minor maintenance activities and for the proper disposal of aircraft cleaning fluids and water used during aircraft washing.

A firefighting station is planned for an area along Airport Avenue, east of the existing terminal area. The firefighting station would serve both as an airport rescue and firefighting station and structural firefighting station serving the western areas of the Town of Colorado City.

The recommended master plan concept includes installing chain link fencing around the entire ultimate airport boundary to reduce the chances of wildlife inadvertently accessing aircraft operational areas. The existing electrical system provides only single phase power. This is planned to be upgraded to three-phase to accommodate the needs of commercial/industrial equipment.

In support of these recommendations, the recommended master plan concept includes the acquisition of approximately 386 acres of land. Of this, approximately 220 acres are privately-owned while the remainder of the property is held by the United States Bureau of Land Management.

# AIRPORT INFLUENCE AREA

In 1997, the State of Arizona enacted legislation which gives local communities the ability to establish Airport Influence Areas (AIA) to aid in notifying property owners that they are in an area that is subject to aircraft noise and overflight. The AIA legislation gives the local communities discretion in establishing which property to include in the AIA. The local community is required to give notice and hold hearings on an AIA proposal. Once an AIA is established, the AIA is recorded with the County Recorder.

Facility planning should include establishing an AIA for Colorado City Municipal Airport. To be compatible with the recommendations of this Master Plan, it is recommended that the AIA for the airport comprise the Part 77 horizontal surface. As shown on **Exhibit 5A**, horizontal surface extends for a radius of 10,000 feet from each runway end. At this distance, the horizontal surface encompasses all aircraft traffic patterns and the approach surfaces to each runway end.

# AIRPORT LAYOUT PLANS

The remainder of this chapter provides a brief description of the official layout drawings for the airport that will be submitted to the FAA and ADOT for review and approval. These plans, referred to as Airport Layout Plans, have been prepared to graphically depict the ultimate airfield layout, facility development, and imaginary surfaces which protect the airport from hazards. This set of plans includes:

- Airport Layout Drawing
- Terminal Area Drawing
- On-Airport Land Use/ Noise Drawing
- Airport Airspace Drawing
- Inner Portion of the Approach Surface Drawings
- Property Map

The airport layout plan set has been prepared on a computer-aided drafting system for future ease of use. The computerized plan set provides detailed information of existing and future

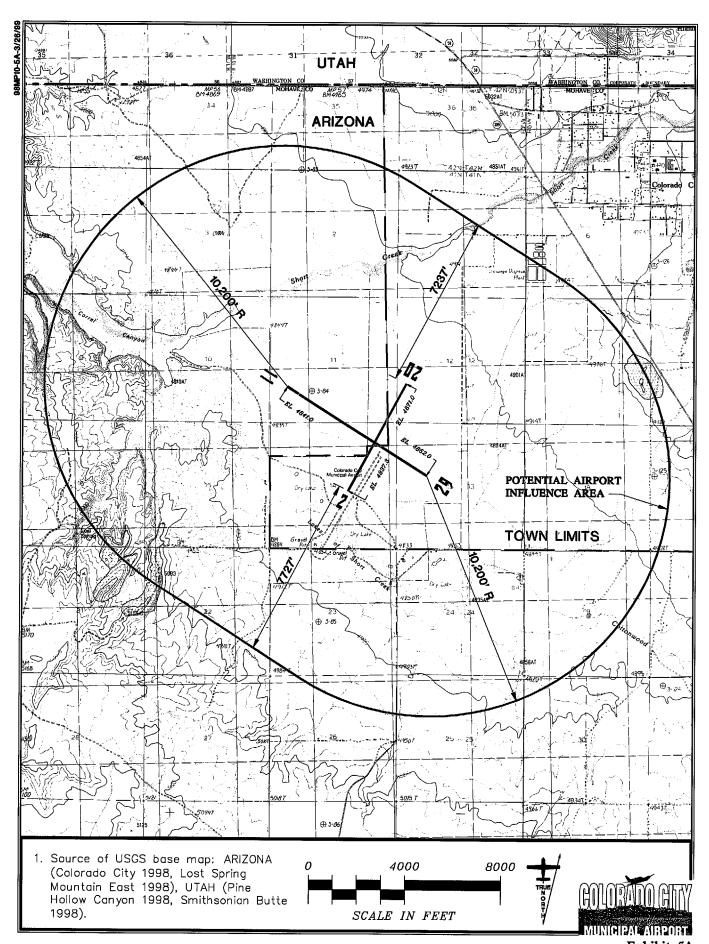
facility layout on multiple layers that permits the user to focus in on any section of the airport at a desirable scale. The plan can be used as base information for design, and can be easily updated in the future to reflect new development and more detail concerning existing conditions as made available through design surveys. The airport layout plan set is submitted to the FAA for approval and must reflect all future development for which federal funding is anticipated. Otherwise, the proposed development will not be eligible for federal funding. Therefore, updating these drawings to reflect changes in existing and ultimate facilities is essential.

### AIRPORT LAYOUT DRAWING

The Airport Layout Drawing graphically presents the existing and ultimate airport layout. Detailed airport and runway data are provided to facilitate the interpretation of the master plan recommendations. Both airfield and landside improvements are depicted.

### TERMINAL AREA DRAWING

The Terminal Area Drawing provides greater detail concerning landside improvements and at a larger scale than the on the Airport Layout Drawing. The Terminal Area Drawing includes detail concerning all existing and planned landside development north of Runway 11-29.



# ON-AIRPORT LAND USE DRAWING

The On-Airport Land Use Drawing is a graphic depiction of on-airport land use recommendations. Three land use categories have been established to account for expected land uses at the airport: airfield operations, general and support/revenue aviation, enhancement. The airfield operations category includes all property encompassing the runways, taxiways, airfield safety areas, and property to the 35-foot building restriction line. The general aviation category includes all areas designated for apron and hangar The support/revenue development. enhancement category encompasses the areas surrounding the nondirectional beacon, automated weather observation system, well, fire protection water tank, and those areas not designated for general aviation land uses which could be developed for aviation or nonrelated commercial aviation development without a need for airfield access. This could potentially include several parcels of land along the north and south sides of Airport Avenue. When development is proposed it should be directed to the appropriate land use area depicted on this plan. This plan also provides a depiction of the future noise contours for the airport. noise contours are discussed in more detail in Appendix B, Environmental Evaluation.

# AIRPORT AIRSPACE DRAWING

To protect the airspace around the airport and approaches to each runway

end from hazards that could affect the safe and efficient operation of aircraft arriving and departing the airport, Federal Aviation Regulations (FAR) Part 77, Objects Affecting Navigable Airspace, have been established for use by local authorities to control the height of objects near the airport. The Airport Airspace Drawing included in this master plan is a graphic depiction of this regulatory criterion. The Airport Airspace Drawing is a tool to aid local authorities in determining if proposed development could present a hazard to the airport and obstruct the approach path to a runway end.

The Town of Colorado City adopted height and hazard zoning protection for the airport on August 14, 1995 based upon FAR Part 77 criteria. Referred to as the Colorado City Municipal Airport Zoning Ordinance, this ordnance also defines land uses near the airport.

To increase the amount of the time that the airport is accessible and accommodate the larger numbers of business and corporate aircraft using the airport, this master plan recommends planning for improved instrument approach capability at the airport that takes advantage of GPS technology. Future one-mile visibility minimum GPS approaches are planned for each end of Runway 11-29.

To protect the approach surfaces to end of Runway 11-29 in accordance with F.A.R. Part 77 regulations, the existing zoning ordinance should amended to include the recommendations of the new Airport Airspace Drawing included with this Master Plan.

# INNER PORTION OF THE APPROACH SURFACE PLANS

The Inner Portion of the Approach Surface Plan is a scaled drawing of the runway protection zone (RPZ), runway safety area (RSA), obstacle free zone (OFZ), and object free area (OFA) for each runway end. A plan and profile view of each RPZ is provided to facilitate identification of obstructions that lie within these safety areas. Detailed obstruction and facility data is provided to identify planned improvements and the disposition of obstructions (as appropriate).

### PROPERTY MAP

The Property Map provides information on the acquisition and identification of land tracts acquired for the airport.

# SUMMARY

The airport layout plan set is designed to assist the Town of Colorado City in

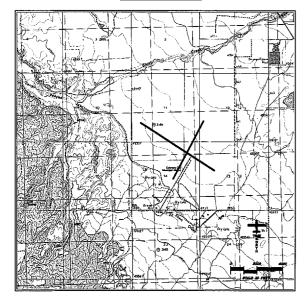
making decisions relative to future development and growth at Colorado City Municipal Airport. The plan provides for development to satisfy expected airport needs over the next twenty vears and well beyond. Flexibility will be a key to future development since activity may not occur exactly as forecast. The plan has considered demands that could be placed upon the airport even beyond the twenty year planning period to ensure that the facility is capable accommodating variety of a The ALP set also circumstances. provides the Town of Colorado City with options to pursue in marketing the assets of the airport for community development. Following the general recommendations of the plan, the airport can maintain it's long term viability and continue to provide air transportation services to the region.

# AIRPORT LAYOUT PLANS FOR COLORADO CITY MUNICIPAL AIRPORT COLORADO CITY, ARIZONA

Prepared for

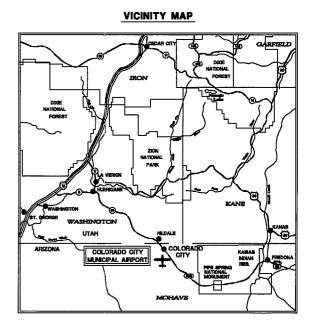
# THE TOWN OF COLORADO CITY

### LOCATION MAP



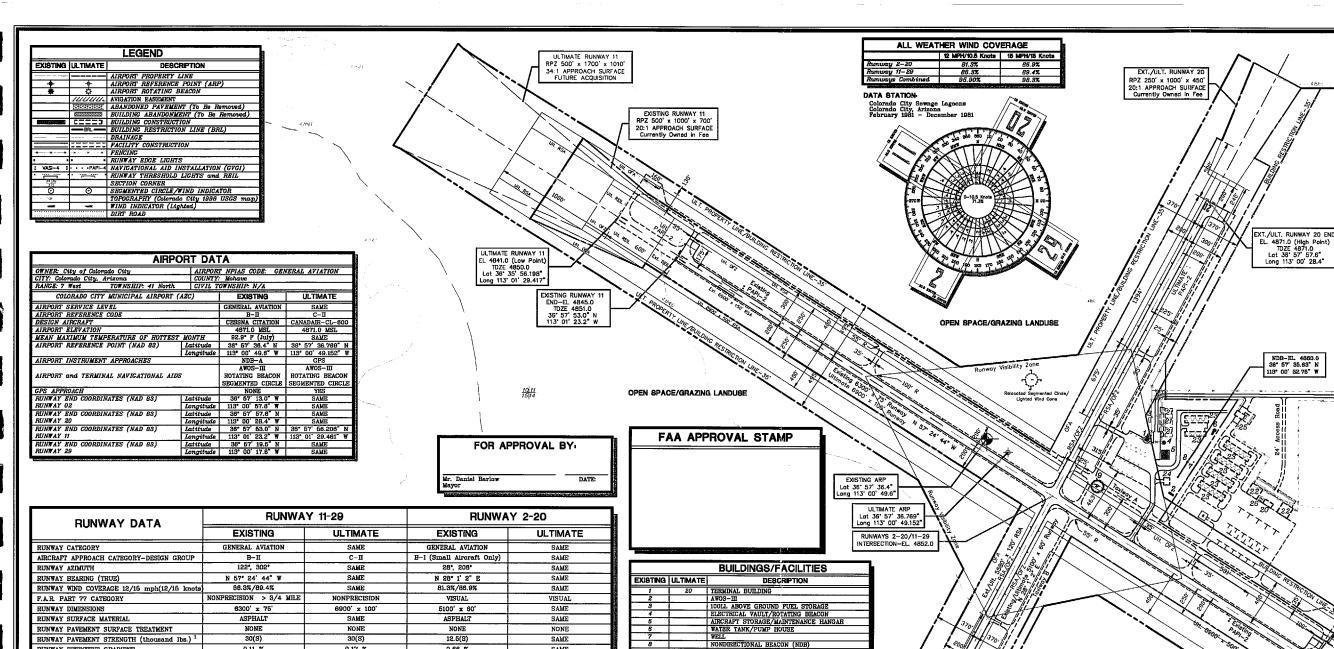
# INDEX OF DRAWINGS

- 1. AIRPORT LAYOUT DRAWING
- 2. TERMINAL AREA DRAWING
- 3. AIRPORT AIRSPACE DRAWING
- 4. INNER PORTION OF RUNWAY 11 APPROACH SURFACE DRAWING
- 5. INNER PORTION OF RUNWAY 29 APPROACH SURFACE DRAWING
- 6. INNER PORTION OF RUNWAY 2-20 APPROACH SURFACES DRAWING
- 7. ON-AIRPORT LAND USE/NOISE DRAWING
- 8. AIRPORT PROPERTY MAP









Details concerning terminal improvements are depicted on the TERMINAL AREA DRAWING, sheet 2 of these plans.

3. Recommended land uses within the airport environs are depicted on the AIRPORT LAND USE/NOISE DRAWING, sheet 7 of these plans.

Existing/ultimate fence line along existing/ultimate property line, except where shown.

All latitude and longitude coordinates report in NAD 83, Source 12/93 ALP.

As of December, 1998 there are no Modifications from FAA Design Standards.
 As of December, 1998 there are no Obstacle Free Zone (OFZ) Object Penetrations.

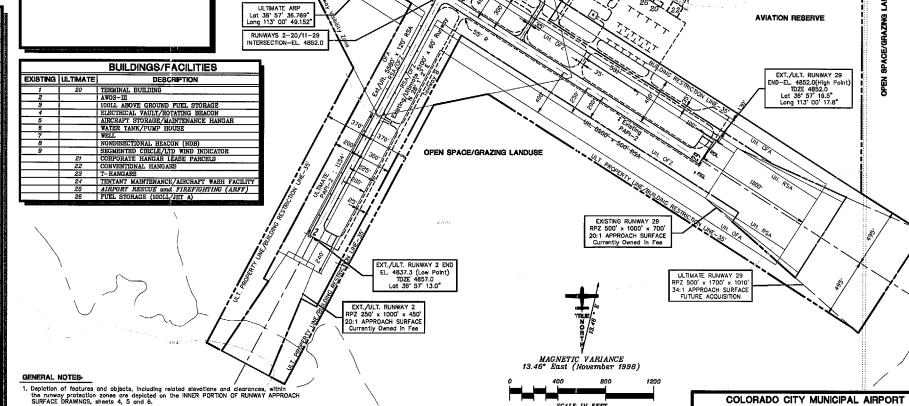
Topography Source: Arizona USGS maps, (Calorada City 1998 and Last Spring Mountain East 1998).

8. As of December, 1998 there are no Threshold Siting Surface Object Penetrations. 9. Existing facilities digitized from Aerial Photography dated February 19, 1998.

	EXIS	TING	ULTII	MATE	EXIS	TING	ULTI	MATE
RUNWAY CATEGORY	GENERAL	AVIATION	SA	ME	GENERAL	NOITAIVA	SA	ME
AIRCRAFT APPROACH CATEGORY-DESIGN GROUP	B-	-II	C-	-П	B-I (Small A	Airoraft Only)	SA	ME
RUNWAY AZIMUTH	122*,	302*	SA	ME	28*,	20B°	SA	ME
RUNWAY BEARING (TRUE)	N 57° 2	4' 44" W	SA	ME	N 58.	1' 2" E	SAME	
RUNWAY WIND COVERAGE 12/16 mph(12/15 knots	86.3%	/89.4%	SA	ME	81.3%,	/86.9%	SAME	
F.A.R. PART 77 CATEGORY	NONPRECISION	> 3/4 MILE	NONPR	ECISION	VIS	UAL	VISUAL	
RUNWAY DIMENSIONS	6300'	x '75'	6900	x 100'	5100'	x 60'	SAME	
RUNWAY SURFACE MATERIAL	ASP	HALT	SA	ME	ASP	HALT	SAME	
RUNWAY PAVEMENT SURFACE TREATMENT	NO	NE	NO	NE	NO	NE	NONE	
RUNWAY PAVEMENT STRENGTH (thousand lbs.) 1	30	(S)	30	(S)	12.5	5(S)	SA	ME
RUNWAY EFFECTIVE GRADIENT	0.1	1 %	0.1	7 %	0.6	6 %	SAME	
RUNWAY LIGHTING	M	RL	SA	ME	MT	RL	SAME	
MAXIMUM RUNWAY ELEVATION ABOVE MSL	4852	MSL	SA	ME	4871	MSL	SAME	
RUNWAY SAFETY AREA (RSA)	6900	x 150'	8900	x 500'	5580'	x 120'	SA	ME
RUNWAY OBSTACLE FREE ZONE (OFZ)	6700'	x 250°	7300	x 250'	5500'	x 120'	SAME	
RUNWAY OBJECT FREE AREA (OFA)	6900'	x 500'	8900'	x 800'	5580'	x 250'	SAME	
TAXIWAY LIGHTING 2	MITL/RE	FLECTORS	М	TL	MITL/REI	TLECTORS	SAME	
TAXIWAY MARKING	CENTI	SRLINE	SA	ME	CENTE	ERLINE	SAME	
TAXIWAY SURFACE MATERIAL	ASP	HALT	ASP	HALT	ASP	HALT	ASPHALT	
TAXIWAY WIDTH	8	5'	3	5'	2	<b>5</b> '	25'	
TAXIWAY SAFETY AREA WIDTH	7	9'	79'		49'		49'	
TAXIWAY OBJECT FREE AREA	191'		131'		89'		89'	
	RUNWAY 11		IUNWAY 11 RUNWAY 29		RUNWAY 2		RUNWAY 20	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE
RUNWAY THRESHOLD DISPLACEMENT	NO	NE	NC	NE	NO	NE	NONE	
RUNWAY STOPWAY	NO	NE	NO	NE	NONE NON		NE	
APPROACH VISIBILITY MINIMUMS	VISUAL	1 MILE	LAURIV	1 MILE	VISUAL	SAME	VISUAL	SAME
F.A.R. PART 77 APPROACH SURFACES	20:1	34:1	20:1	34:1	20:1	SAME	20:1	SAME
RSA BEYOND STOP END OF RUNWAY	300' x 160'	1000' x 500'	300' x 150'	1000' x 500'	240' x 120'	SAME	240' x 120'	SAME
OFA BEYOND STOP END OF RUNWAY	300' x 500'	1000' x 800'	300' x 500'	1000' x 800'	240' x 250'	SAME	240' x 250'	SAME
OFZ BEYOND STOP END OF RUNWAY	200' x 250'	200' x 250'	200' x 250'	200' x 250'	200' x 120'	SAMŒ	200' x 120'	SAME
RUNWAY TOUCHDOWN ZONE ELEVATION	4851 MSL	4850 MSL	4852 MSL	SAME	4857 MSL	SAME	4871 MSL	SAME
RUNWAY MARKING	VISUAL	VISUAL	LAURIV	VISUAL	VISUAL	SAME	JAURIV	SAME
RUNWAY APPROACH LIGHTING	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
RUNWAY INSTRUMENTATION	NONE	GPS	NONE	GPS	NONE	NONE	NONE	NONE
RUNWAY ELECTRONIC NAVIGATIONAL AIDS	-	GPS	_	GPS	-	-		_
	-	-	-	-	-	-	_	_
	-	_	-	_	-	-	_	1
RUNWAY VISUAL NAVIGATIONAL AIDS	PAPI-2	PAPI-2	PAPI-2	PAPI-2	-	PAPI-2	_	PAPI-2
	REIL	REIL	REIL	REIL	-	-	-	_

avernent strengths are expressed in Single (S), and Dual (D) wheel loading capacities.

Taxiway lighting currently installed only at Runway/Taxiway intersections.



SCALE IN FEET

DATE BY APP'D

REVISIONS

THE CONTENTS OF THIS PLAN DO NOT MICESSARILY REPLACT THE OFFICIAL VIEWS OR POLICY OF TH FAA OR ADOIT MEDICARTICS. ACCEPTANCE OF THIS DOCUMENT BY THE FAA AND ADOIT ARRONAMINGS DOES NOT IN ATT WAS CONSTITUTED A COMMUNISM ON THE PART OF THE OWNERD STATES ON STATE THE PROVISIO DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PURIL LAWS.

**AVIATION RESERVE** 

AIRPORT AVENUE

COLORADO CITY MUNICIPAL AIRPORT

AIRPORT LAYOUT DRAWING

Colorado City, Arizona

Coffman

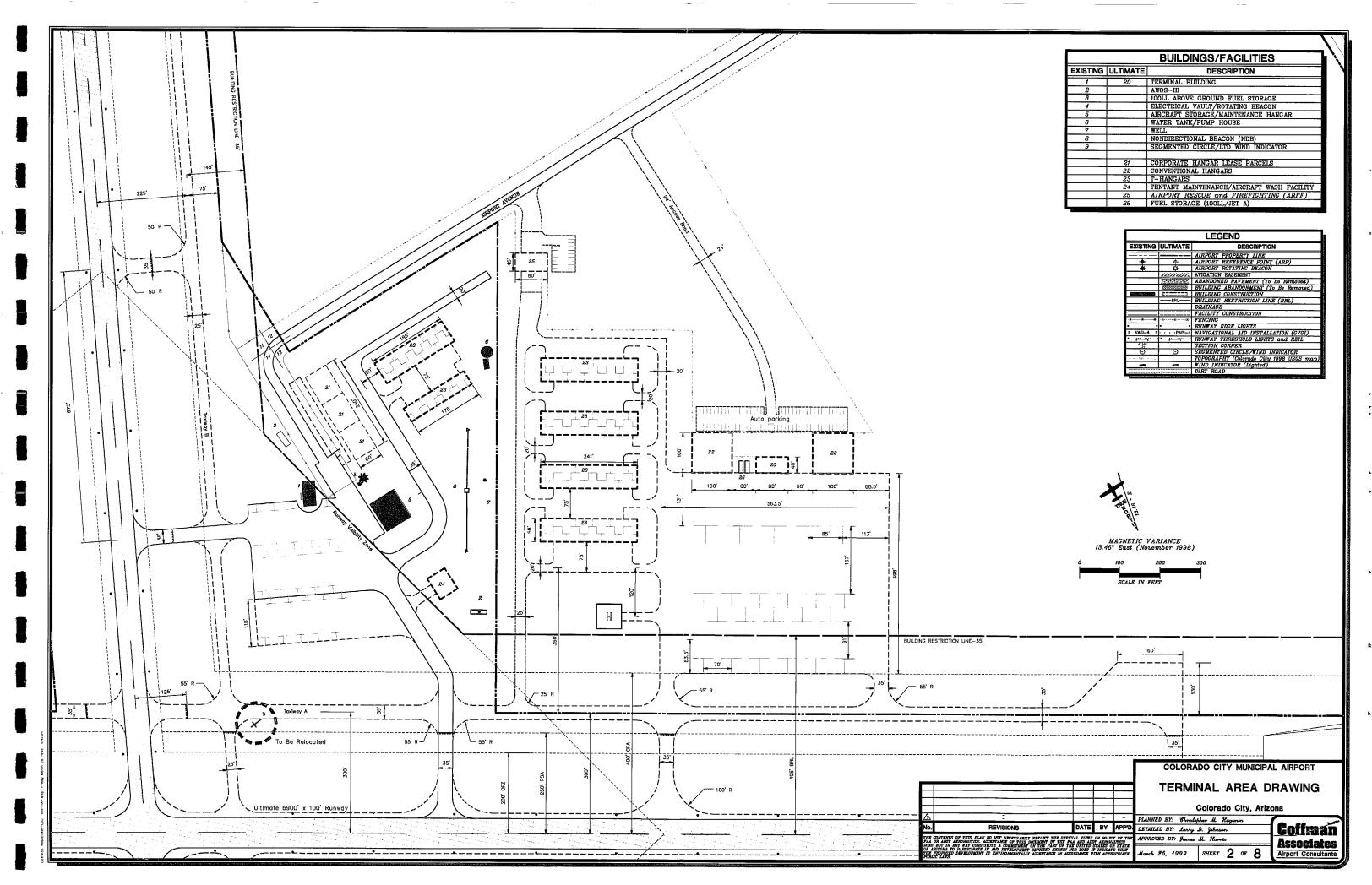
**Associates** 

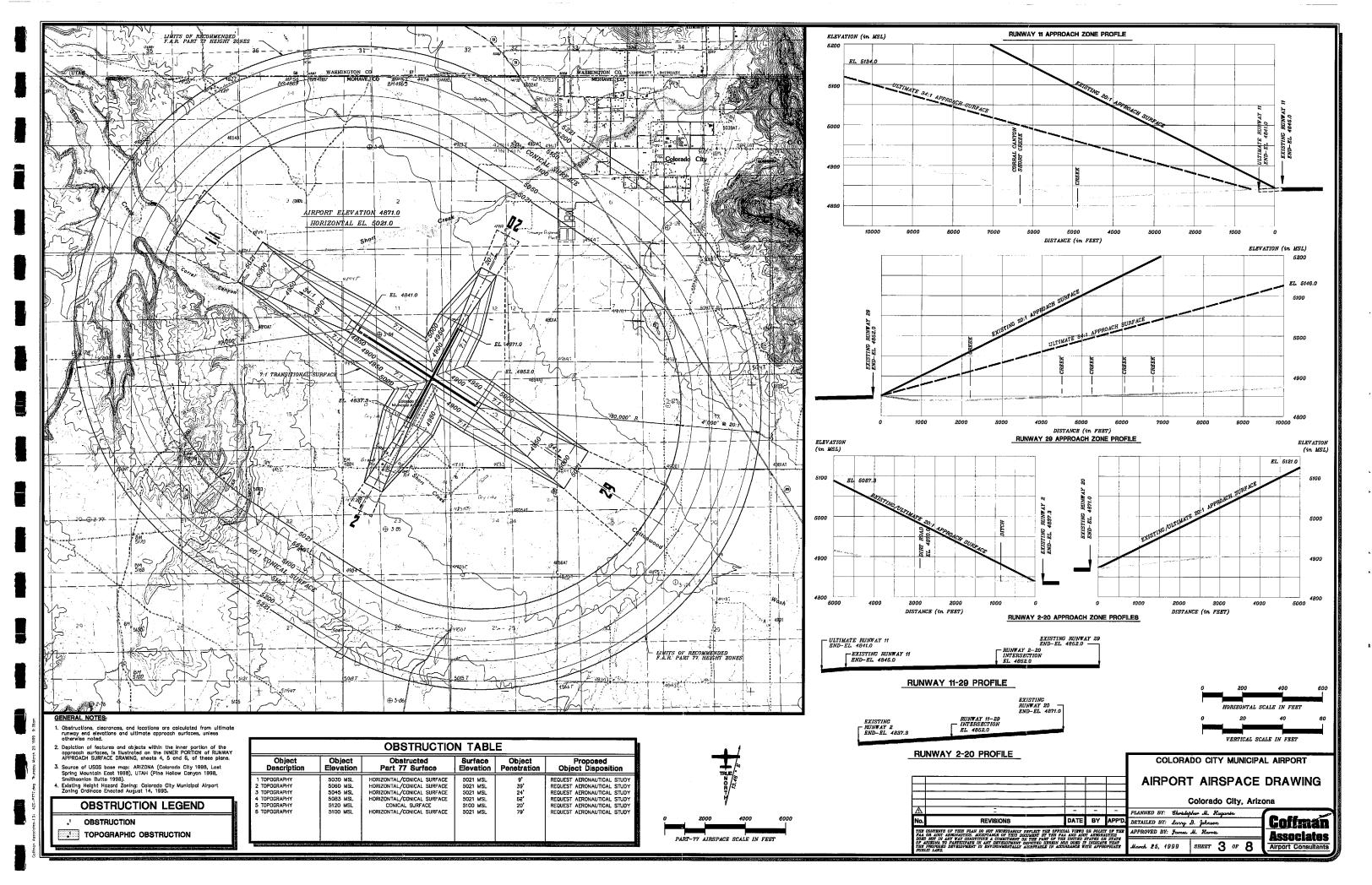
Airport Consultants

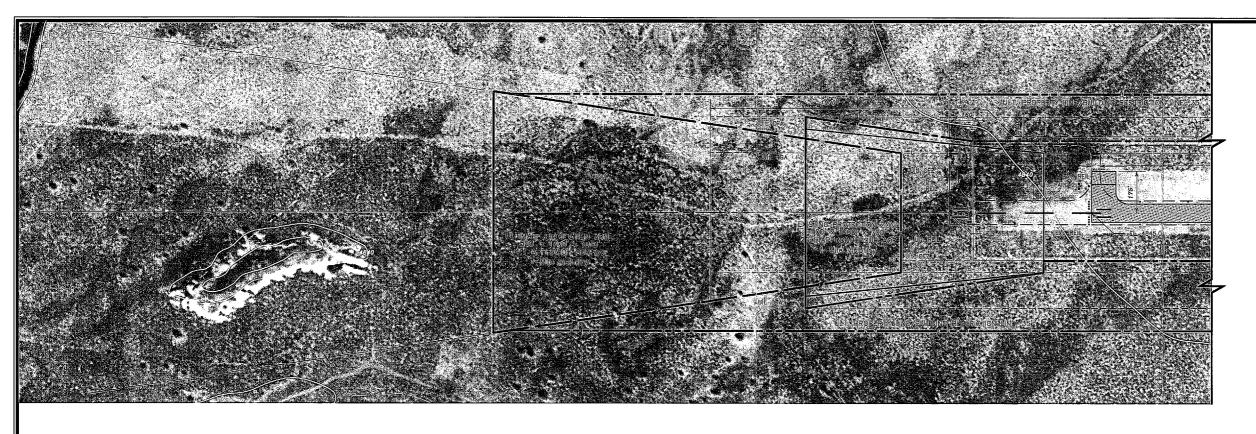
PLANNED BY: Christopher M. Huguni

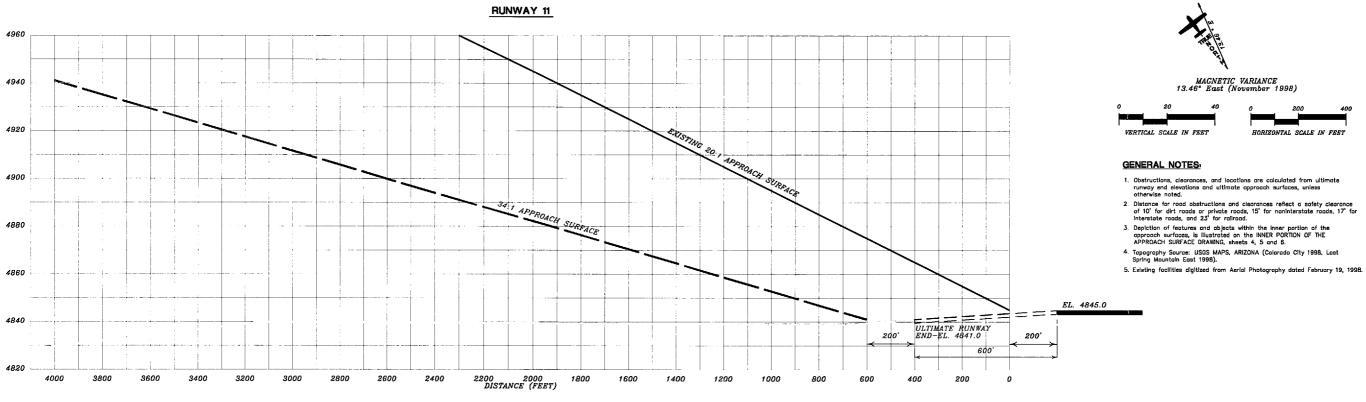
larch 24, 1999 | SHEET 1 OF 8

DETAILED BY: Larry B. Johnson









RUNWAY END 11 OBSTRUCTION TABLE					
Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
None	-	-	-	-	-

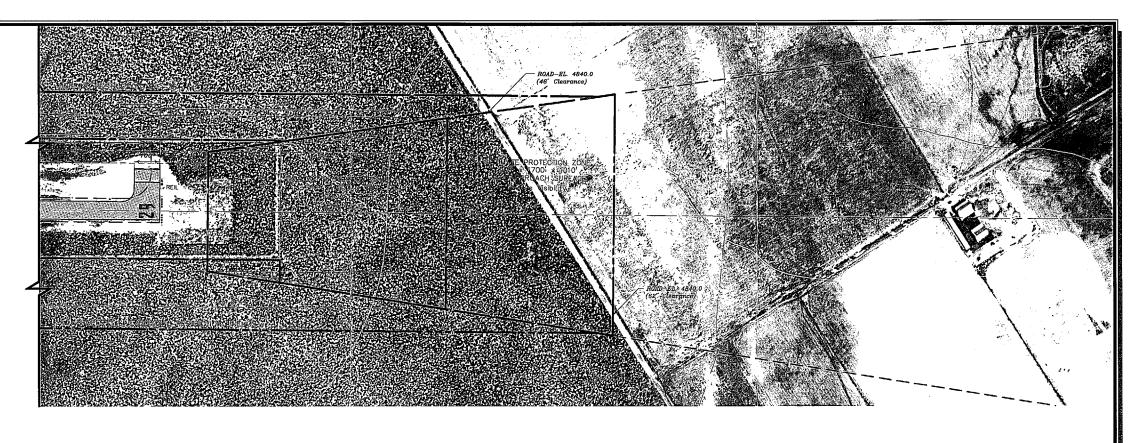
COLORADO CITY MUNICIPAL AIRPORT **INNER PORTION OF RUNWAY 11** APPROACH SURFACE DRAWING

Colorado City, Arizona

DATE BY APP'D. DETAILED BY: Larry D. Johnson

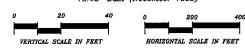
larch 25, 1999 SHEET 4 OF 8

Coffman **Associates** 





MAGNETIC VARIANCE 13.46° East (November 1998)



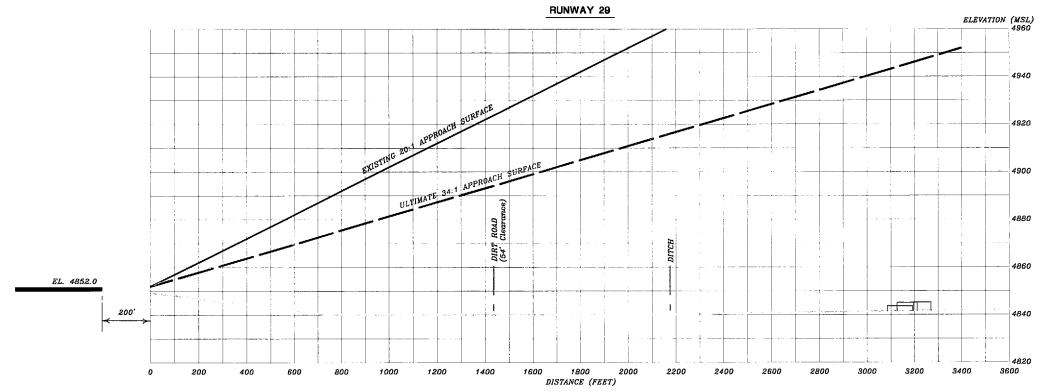
# GENERAL NOTES

- Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted.
- otherwise noted.

  2. Distance for road obstructions and clearances reflect a safety clearance of 10' for dirt roads or private roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroad.

  3. Depletion of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF THE APPROACH SURFACE DRAWING, sheets 4, 5 and 6.

- Topography Source: Arizona USGS Maps, (Colorado City 1998, and Lost Spring Mountain East 1998).
   Existing facilities digitized from Aerial Photography dated February 19, 1998.



RUNWAY END 29 OBSTRUCTION TABLE					
Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE	_	_	_	-	-
-	_	_	_	_	_
_	_	_	_	-	_
	-	<del>-</del>	_	-	<u> </u>
			MARKATAN SANSARA		orazione de la companya de la compa

COLORADO CITY MUNICIPAL AIRPORT INNER PORTION OF RUNWAY 29
APPROACH SURFACE DRAWING
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Colorado City, Arizona

DATE BY APP'D. DETAILED BY: Shriotopher M. Hugumin

ERONAUTICS	APPROVED BY: James M. Harris						
TES OR STATS NDICATE THAT APPROPRIATE	March 25, 1999	SHEET 5 OF 8	Ā				

Coffman Associates Airport Consultants

